Integrated Modeling Framework

Global Climate
NASA-GISS

Meteorological parameters at 4x5° resolution

Regional Climate
ClimRAMS,
MM5 (1 km)

Heat events

Public Health Impacts
Risk Coefficients

Surface parameters at 30m resolution

Ozone and PM$_{2.5}$

Meteorological parameters at 1 km resolution

Temperature changes

Land-use/Land Cover
SLEUTH, UrbanSIM,
Remote Sensing

Point, area, biogenic and mobile source emissions

Air Quality
MODELS-3

Long-term emission estimates

Emission Coefficients

Integrated Energy/ Materials Flow
MARKAL

BROOKHAVEN
NATIONAL LABORATORY